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EXAMINER

CEHIC, KENAN

ART UNIT	PAPER NUMBER
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2616

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/549,988	Applicant(s) SCHMITT ET AL.	
	Examiner Kenan Cehic	Art Unit 2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>05/09/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claim 1 is objected to because of the following informalities:

For claim 1, the claim limitation “the quasi-simultaneously transmitted packets” in line 5, is the first occurrence. It is suggested to applicant to change this limitation to – quasi-simultaneously transmitted packets --.

For claim 1, the claim limitation “the received packets” in line 6, is the first occurrence. It is suggested to applicant to change this limitation to – received packets --.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 1-7 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

For claim 1, “largest possible *integral* number *m* of groups of packets” was not adequately described in the specification; it is not clear how to obtain or determine a “largest possible *integral* number”; also it is not clear what exactly the term “integral” encompasses.

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Claim 2-7 are rejected as being dependent on rejected claims.

3. Claim 6 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

For claim 6, "the evaluation of the bandwidth is achieved off-line" was not adequately described in the specification; it is not clear how to perform the invention "off-line", nor is it clear what exactly the term "off-line" encompasses.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 1-7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

For claim 1, for the claim limitation "largest possible integral number m " it is not clear what this limitation encompasses; especially it is not clear what the term "integral" encompasses.

For claim 2 line 3, the formula is not clear. The first summation (with j and m as the limits) is not clear since the index variable (j) of the summation is never used in the summation expression.

For claim 2 in line 3, it is not clear what the term " $t_{(j+1)m}$ ", represents.

For claim 5 and 6, the claim limitation "the evaluation" in line 2 has no antecedent basis.

As regarding claim 5 line 2, it is not clear what the term “on-line” encompasses nor what (which component , network etc) “on-line” is.

As regarding claim 6 line 2, it is not clear what the term “off-line” encompasses nor what (which component , network etc) “off-line” is.

Claim 3-4,7 are rejected because they depend on rejected claims.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

6. Claim 8 and 9 are rejected under 35 U.S.C. 102(e) as being anticipated by Zhang et al. (US7,133,368).

For claim 8, Zhang et al discloses, a device (see Figure 9, 216) for evaluating the bandwidth (see column 12 lines 10-13 “measure the bottleneck bandwidth”) between a first point (see Figure 9, 210) and a second point (see Figure 9, 216) liable to exchange

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digital data packets (see Figure 9, 214, 212, 214', 212') in a telecommunications network (see Figure 1,120,124,122 and column 2 lines 41-45 "network") including a module (see Figure 9, 210) for marking the transmitted packets (see Figure 9, 214, 212, 214', 212') and a module (see Figure 9, 216) for analyzing (see column 12 lines "Peer 216....measure the bottleneck bandwidth") the received packets (see Figure 9, 214', 212' and column 12 lines 19-21 "receiving probing packets pair") characterized in that the analysis module (see Figure 9, 216) includes:

Means (see Figure 9, 216) for time-stamping (see column 12 lines 28-30 "arrival timestamps") the received packets (see column 12 lines 19-30 "receiving probing packet pair 212',214'timestamps of the first 212' and second 214'"),

Means (see Figure 9, 216) for sorting (see column 12 lines 28-32 "arrival timestamp of the first 212' and second 214' packets...adds there arrival timestamps in the probing packets 212'', 214'';packets are classified according to arrival time) the received packets (see column 12 lines 19-30 "receiving probing packet pair 212',214'),

Means (see Figure 9, 216) for measuring the time intervals (see column 12 lines 20-29 " $T_{\text{probedPairArrived1}} - T_{\text{probedPairArrived2}}$ " and arrival timestamp of the first 212' and second 214' packets") separating the instants (see column 12 lines 20-26 " $T_{\text{probedPairArrived1}} -$

$T_{\text{probedPairArrived2}}$ ") when the transmitted packets (see column 12 lines 15-20 "probing packet 212, 214...leaves...receiving probing packet pair 212',214') are received by the second point (see column 12 lines 15-20 "probing packet 212, 214...leaves...on the probed peer side 216, upon receiving probing packet pair 212',214' and), means (see Figure 9, 216 and column 12 lines 10-14 "'probed Peer 216....can measure the

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bottleneck bandwidth”) for calculating the bandwidth (see column 12 lines 10-13 “measure the bottleneck bandwidth” and column 12 lines 21-26 “bottleneck bandwidth of the forward path can be calculated”).

For claim 9, Zhang et al discloses a module (see Figure 9, 216) for analyzing (see column 12 lines “Peer 216....measure the bottleneck bandwidth”) data packets received (see column 12 lines 19-30 “receiving probing packet pair 212’,214’.....timestamps of the first 212’ and second 214’”) in a telecommunications network (see Figure 1,120,124,122 and column 2 lines 41-45 “network”), characterized in that it includes:

Means (see Figure 9, 216) for time-stamping (see column 12 lines 28-30 “arrival timestamps”) the received packets (see column 12 lines 19-30 “receiving probing packet pair 212’,214’.....timestamps of the first 212’ and second 214’”),

means (see Figure 9, 216) for sorting (see column 12 lines 28-32 “arrival timestamp of the first 212’ and second 214’ packets...adds there arrival timestamps in the probing packets 212’’, 214’’;packets are classified according to arrival time) the received packets (see column 12 lines 19-30 “receiving probing packet pair 212’,214’),

means (see Figure 9, 216)for measuring the time intervals (see column 12 lines 20-29 “ $T_{\text{probedPairArrived1}} - T_{\text{probedPairArrived2}}$ ” and arrival timestamp of the first 212’ and second 214’ packets”) separating the instants (see column 12 lines 20-26 “ $T_{\text{probedPairArrived1}} -$

$T_{\text{probedPairArrived2}}$ ”) when the transmitted packets (see column 12 lines 15-20 “probing packet 212, 214...leaves...receiving probing packet pair 212’,214’) are received by the second point (see column 12 lines 15-20 “probing packet 212, 214...leaves...on the

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probed peer side 216, upon receiving probing packet pair 212',214' and), means (see Figure 9, 216 and column 12 lines 10-14 "'probed Peer 216....can measure the bottleneck bandwidth"), means (see Figure 9, 216) for calculating the bandwidth (see column 12 lines 10-13 "measure the bottleneck bandwidth" and column 12 lines 21-26 "bottleneck bandwidth of the forward path can be calculated").

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claim 1, 4,5,7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gross (US 6,850,541) in view of Zhang et al. (US 7,133,368).

For claim 1, Gross discloses a method for evaluating the bandwidth (see Figure 6a and 6b 620-640 and column 4 lines 21-24 “procedure for using sets of packet pairs to determine the bandwidth”) between a first point (see Figure 4, 465, 105) and a second point (see Figure 4, 470, 110) liable to exchange digital data packets (see Figure 4, 402, 403 and column 2 lines 60-62 “sends out sets of packet pairs”) in a telecommunications network (see Figure 6a, 610, “network”), characterized in that it includes the following steps:

- a. associating a same identifier (see column 3 lines 22-27 “Each set of packets uses a different packet size...set 402..packet size of 96 bytes...set 403...packet size of 512 bytes” and column 3 lines 28-33 “packet pairs of one set are binned separately from the time deltas for the packet pairs of the other set”) with the quasi-simultaneously transmitted packets (see Figure 6a, 610, “send the sets packet pairs”),
- b. recording the received packets (see column 3 lines 48-51 “ measuring time a packet arrives...first packet arrives...second packet arrives”),
- c. identifying (see column 6 lines 10-14 “first and second sets of packet pairs...determining a time delta for each packet pair in the first and second sets” and column 4 lines 27-30 “ and column 5 lines 45-47 “two sets of packet pairs...each set...different packet size”) and sorting the packets received (see column 3 lines 48-52 “Packet classifier...packet arrives...first packet arrives....second packet arrives”; the two

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packets are classified according to arrival time) with the same identifier (see column 6 lines 10-14 “first and second sets of packet pairs...determining a time delta for each packet pair in the first and second sets” and column 4 lines 27-30 “ and column 5 lines 45-47 “two sets of packet pairs...each set...different packet size” and column 3 lines 22-27 “Each set of packets uses a different packet size...set 402...packet size of 96 bytes...set 403...packet size of 512 bytes” and column 3 lines 28-33 “packet pairs of one set are binned separately from the time deltas for the packet pairs of the other set”),

d. selecting (see Figure 6B and column 4 lines 31-47 “...bins are compared...any bins are eliminated if...bins...less than average bandwidth are eliminated...bins are eliminated...selected as the network bandwidth”) the largest possible integral number m (see column 4 lines 8-10 “bin...the amplitude...indicates the number of packet pairs...whose time delta fits..”) of groups of packets (see column 4 lines 8-10 “bin...the amplitude...indicates the number of packet pairs...whose time delta fits..”) with the same identifier (see Figure 5 “Large Packet Size” and “Small packet Size” and column 4 lines 13-20 “small packet size set...large packet size set”)

e. measuring (see column 3 lines 9-10 “measured”) the time intervals separating (see column 3 lines 9-10 “time delta for each packet pair has been measured” and column 3 lines 47-52 “subtracting the time the first packet...from the time the second packet...time delta may be determined”) the instants when the packets (see column 3 lines 48-51 “measuring time a packet arrives...first packet arrives...second packet arrives”) of the selected groups (see Figure 5 “Large Packet Size” and “Small packet Size” and column 4 lines 5-20 “number or packets...small packet size set ...large packet size set, and Figure

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6B and column 4 lines 31-47 "...bins are compared...any bins are eliminated if...bins...less than average bandwidth are eliminated...bins are eliminated...selected as the network bandwidth") are received (see column 3 lines 48-52 "Packet classifier...packet arrives...first packet arrives....second packet arrives"; the two packets are classified according to arrival time) by the second point (see Figure 4, 110, 470,475), f. calculating the bandwidth (see Figure 6a and 6b 620-640 and column 4 lines 21-24 "procedure for using sets of packet pairs to determine the bandwidth") according to the number of packets (see column 4 lines 8-10 "the amplitude...indicates the number of packet pairs", and column 4 lines 31-47 "bins are compared...bins...are eliminated....have a greater amplitude...bins with the highest remaining amplitude...have an amplitude less than a threshold...are eliminated") of the selected groups (see Figure 5 "Large Packet Size" and "Small packet Size" and column 4 lines 5-20 "number or packets...small packet size set ...large packet size set, and Figure 6B and column 4 lines 31-47 "each set placed in a different bin...bins are compared...any bins are eliminated if...bins...less than average bandwidth are eliminated...bins are eliminated...selected as the network bandwidth") and to the total transmission time of these packets (see column 4 lines 31-32 "time deltas are placed in bins" and column 3 line 48-52 "measuring the time a packet arrives...time the first packet arrives...time second packet arrives....time delta"; delta depends on packet arrival time, packet arrival time depends on transit time of the packet).

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For claim 5, Gross discloses, characterized in that the evaluation of the bandwidth (see Figure 6a-b, 61-640 and column 4 lines 20-23 “determine bandwidth”) is achieved on-line (see Figure 4, 402, 403 and column 2 lines 60-62 “sends out sets of packet pairs” and see column 3 lines 48-51 “measuring time a packet arrives...first packet arrives...second packet arrives”).

Gross is silent about:

As regarding claim 1, including a plurality of sub-networks and for each transmission direction through at least one of said sub-networks and time-stamping received packets.

As regarding claim 4, characterized in that marking of the data packets is achieved at the transmitting point upon a request from the receiving point.

As regarding claim 7, characterized in that the telecommunications network is of the IP type.

Zhang et al from the same or similar field of endeavor discloses an adaptive bandwidth control with the following features:

As regarding claim 1, Zhang discloses including a plurality of sub-networks (see column 7 lines 45-51 “IP address...IP address...internet”; the internet is divided in subnetworks according to range of logical addresses) and for each transmission direction (see Figure 9; note arrows in both directions and column 12 lines 10-14 “forward and return paths separately”) through at least one of said sub-networks (see column 7 lines 45-51 “IP address...IP address...internet”; the internet is divided in subnetworks according to range of logical addresses) and time-stamping (see column 12 lines 28-31 “arrival timestamps”) received packets (see column 12 lines 19-30 “receiving probing packet pair 212’, 214’).

As regarding claim 4, Zhang discloses characterized in that marking (see column 12 lines 30-34 “adds these arrival timestamps in the probing packets 212”, 214”) of the data packets (see Figure 9, 214, 212, 214’, 212’, 212”, 214”, 212’’, 214’’) is achieved at the transmitting point (see Figure 9, 210 and see Figure 9, 210/216 and column 12 lines 9-14 “forward and return path separately” and column 8 lines 33-36 “request from a peer...to probe”) upon a request (see column 8 lines 33-36 “request...to probe”) from the receiving point (see Figure 9, 210/216 and column 12 lines 9-14 “forward and return path separately” and column 8 lines 33-36 “request from a peer...to probe”).

As regarding claim 7, Zhang et al discloses characterized in that the telecommunications network (see Figure 1, 122,124,120 and column 2 lines 41-44 “network”) is of the IP type (see column 2 lines 55-60 “have an external IP address” and column 7 line 39 “have a local IP address”, column 7 lines 59-62 “IP address”).

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the system of Gross by using the features, as taught by Zhang et al., in order to provide a new and improved system and method of managing latency between peers in a network and a to provide a user with a list of number of peers that meet acceptable performance criteria (see column 2 line 41-54).

8. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gross (US 6,850,541) in view of Zhang et al. (US 7,133,368) as applied to claim 1 above, and further in view of Botvich (US 2005/0100009).

For claim 4, the claimed invention is described in paragraph 7.

Gross and Karam are silent about:

As regarding claim 6, characterized in that the evaluation of the bandwidth is achieved off-line.

Botvich from the same or similar field of endeavor discloses a bandwidth estimation method with the following features:

As regarding claim 6, Botvich discloses in that the evaluation of the bandwidth (see section 0037 lines 1-4 "estimating the effective bandwidth off-line") is achieved off-line (see section 0037 lines 1-4 "estimating the effective bandwidth off-line").

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the system of Gross and Zhang et al by using the features, as taught by Botvich, in order to provide a method for estimating the effective bandwidth requirement, which can be quickly and easily calculated without too much router or switch capacity being used (see section 00025-0028).

Allowable Subject Matter

9. Claims 2 and 3 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Prior art fails to teach the specific formula used for bandwidth calculation.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US-2003/0016630 A1	01-2003	Vega-Garcia et al.	370/252
US-6,580,694 B1	06-2003	Baker, Carl R.	370/252
US-2003/0161321 A1	08-2003	Karam et al.	370/395.21
US-6,937,573 B2	08-2005	Chan et al.	370/252
US-2007/0086485 A1	04-2007	Vega-Garcia et al.	370/468

The above are cited to show systems/methods for bandwidth calculation.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenan Cehic whose telephone number is (571) 270-3120. The examiner can normally be reached on Monday through Friday 8:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kwang Yao can be reached on (571) 272-3182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

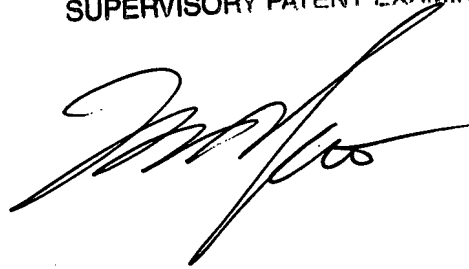
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like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KC

KWANG BIN YAO
SUPERVISORY PATENT EXAMINER

A handwritten signature in black ink, appearing to read 'Kwang Bin Yao', is written over the printed name and title.